



ABSTRACT

Chemical analysis of impurities in buffer gas is provided at various pressures up to atmospheric. Identification of the impurities is carried out by analyzing energy of electrons released via ionization of the impurity atoms or molecules in their collisions either with excited atoms of buffer gas or with monochromatic photons. To produce excited metastable atoms a pulsed plasma is ignited between plane anode and cathode, and electrons energy is measured in afterglow by determining second derivative of electric current in dependence of voltage applied between these electrodes. Another way, electrons energy can be analyzed by positioning a grid between anode and cathode and by using an external radiation source to ionize the impurities in equipotential space between the grid and the anode. Inter-electrode gap and gas pressure must be chosen so that distortions in the electrons energy distribution due to collisions with buffer gas should not exceed a prescribed value.